REMARKS

Reconsideration and allowance of this application are respectfully requested in light of the above amendments and the following remarks.

Claims 1, 2, 4, 9, 10, and 12-20 have been canceled. Claims 3, 5-8, and 11 have been amended, and claims 21-31 have been added. The amendments have been drafted to overcome the issues underlying the 35 USC 112, second paragraph, rejections applied to claims 8 and 9. Support for the amendments is provided, for example, in the original claims and paragraphs [0163]-[0177] of the specification.

The title of the invention has been amended so as to be in accordance with the claimed subject matter.

The specification has been amended to cross-reference the international phase application and to identify Applicant's claim to foreign priority, as suggested in Section 3 of the Office Action.

Claims 1-4, 10-12, and 20 were rejected, under 35 USC §103(a), as being unpatentable over Jin et al. (JP 08-263096) in view of Nomura (JP 10-207496). Claims 5-8 and 14 were rejected, under 35 USC §103(a), as being unpatentable over Jin et al. (JP 08-263096) in view of Nomura (JP 10-207496) and Kono (JP 08-046517). Claims 9 and 15 were rejected, under 35 USC §103(a), as being unpatentable over Jin et al. (JP 08-263096) in view of Nomura (JP 10-207496), Kono (JP 08-046517), and Wang et al. (US 6,934,676). Claim 13 was rejected, under 35 USC §103(a), as being unpatentable over Jin in view of Nomura (JP 10-207496) and Chen (US 2002/0007273). Claims 16-19 were rejected, under 35 USC §103(a), as being unpatentable over Ebara et al. (JP 2000-322097) in view of Jin et al. (JP 08-263096) and Nomura (JP 10-

207496). The references herein to the specification and drawing are for illustrative purposes only and are not intended to limit the scope of the invention to the referenced embodiments. To the extent these rejections may be deemed applicable to the amended claims, the Applicant respectfully traverses based on the points set forth below.

The invention defined by independent claims 21, 22, 24, 25, 30, and 31 has features including:

(1) carrying out frequency domain transform in units of an enhancement frame having a shorter time length than a base frame (feature 1);

(2) dividing a plurality of transform coefficients represented on a two dimensional plane comprised of the time axis and the frequency axis into a plurality of domains on the two dimensional plane and encoding a part of the domains (feature 2) ; and

(3) dividing the domains such that each domain includes at least a plurality of transform coefficients which are continuous in the time direction (feature 3).

Feature 1 is directed to solving a problem unique to frequency domain transform. That is, if the base frame and the enhancement frame have the same time length, overlapping addition (i.e., processing of superposing half of the preceding analysis frame and half of the following analysis frame) is carried out in frequency domain transform and a long delay occurs upon decoding (see Fig. 2 and specification page 6, lines 1-17). Particularly, this delay becomes greater in proportion to the number of layers, which becomes a more significant problem in scalable coding. By setting the time length of the enhancement frame shorter than the base frame, the claimed invention makes it possible to set the time length of each enhancement frame shorter and starts processing the next enhancement frame without waiting a long time (see Fig. 7

and page 16, line 8, through page 17, line 17). Consequently, feature 1 supports reducing processing delay.

Feature 2 is directed to reducing a coding rate. According to feature 1, the time length of an enhancement frame becomes shorter and only a signal correlation between short time periods can be utilized in a frequency domain analysis, which decreases the coding efficiency and increases the coding rate. For this reason, according to the claimed invention, by dividing a plurality of transform coefficients represented on a two dimensional plane comprised of a time axis and a frequency axis into a plurality of domains on the two dimensional plane and encoding only part of the domains, the coding target is limited to part of the data and an increase in coding rate is prevented (see specification paragraph [0114]). Particularly, by grouping transform coefficients into several domains and deciding whether or not to carry out encoding on a per domain basis, processing becomes easier and the rate of coding information showing the selected domains can be reduced (see paragraph [0178]).

Feature 3 is directed to using domains that include transform coefficients, which are continuous in the time direction, as domains obtained by the domain division of feature 2. The time length of the enhancement frame is made shorter according to feature 1 and so the coding efficiency decreases if coding is carried out in units of the enhancement frame, as described above. On the other hand, correlation between the spectra of enhancement layers becomes significant. By grouping transform coefficients that are continuous in the time direction into one domain, it is possible to increase the coding efficiency. In other words, according to the claimed invention, while making the analysis length in the frequency domain (that is, the time length of the enhancement layer) shorter, the unit length of coding processing is made longer than the

analysis length in the frequency domain. By employing this configuration, it is possible to make the reduction of delay caused by frequency domain transform compatible with the improvement of coding efficiency.

Jin discloses scalable coding for carrying out low-quality encoding with a high compression rate in a lower layer (base layer) and carrying out high-quality encoding with a low compression rate in a higher layer. By this means, Jin provides an advantage of realizing low-quality decoding with a high compression rate in coding in the lower layer and providing a high-quality decoded signal in the higher layer that is not influenced by low-quality decoding in the lower layer.

However, Jin does not disclose: (1) changing the frame lengths for the lower layer and the higher layer in frequency transform and (2) reducing delay. For this reason, Jin does not provide an advantage of making the reduction in delay caused by frequency domain transform compatible with an improvement in coding efficiency.

Nomura and the claimed invention share in common controlling a frame length to reduce coding delay but are different in the methods of controlling the frame length. Nomura discloses variably controlling the frame length of signals which are coding targets without taking into account scalable coding. On the other hand, the claimed invention sets the frame length of the enhancement layer shorter than the frame length of the base layer in scalable coding.

Even if the teachings of Nomura and Jin are combined, the combination would be directed to variably controlling both the frame length of the base layer and the enhancement layer at the same time and would not realize the claimed subject matter of varying the frame length

between the base layer and the enhancement layer and controlling the frame length of the enhancement layer to be shorter than that of the base layer.

Further, none of Jin, Nomura, and other cited references discloses or suggests the reason, method, and advantage of varying the frame length between the base layer and the enhancement layer and setting in advance the length of the enhancement layer shorter than the length of the base layer. Also, none of the cited references discloses the above-mentioned features of the claimed invention of: carrying out frequency domain transform in units of an enhancement frame having a shorter time length than a base frame (feature 1); dividing a plurality of transform coefficients represented on a two dimensional plane comprised of a time axis and a frequency axis into a plurality of the domains on the two dimensional plane and encoding a part of the domains (feature 2); and dividing the domains such that each domain includes at least a plurality of transform coefficients which are continuous in the time direction (feature 3).

The claimed subject matter supports coding a signal, which predominantly comprises speech with music and noise superimposed in the background, with high quality using a low bit rate and short delay (see specification page 6, line 25, through page 7, lines 9).

Accordingly, the Applicant submits that the applied references, considered individually or in combination, neither anticipate nor render obvious the subject matter now defined by independent claims 21, 22, 24, 25, 30, and 31. Therefore, allowance of claims 21, 22, 24, 25, 30, and 31 and all claims dependent therefrom is warranted.

In view of the above, it is submitted that this application is in condition for allowance, and a notice to that effect is respectfully solicited.

If any issues remain which may best be resolved through a telephone communication, the Examiner is requested to telephone the undersigned at the local Washington, D.C. telephone number listed below.

Respectfully submitted,

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